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# स्वचल वाहन – हुड सिटकनी तंत्र – परीक्षण पद्धति

## *Indian Standard*

# AUTOMOTIVE VEHICLES — HOOD LATCH SYSTEM — METHOD OF TEST

UDC 629·113·011·64 : 683·31 : 620·1

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BUREAU OF INDIAN STANDARDS
MANAK BHAVAN, 9 BAHADUR SHAH ZAFAR MARG
NEW DELHI 110002

*February* 1995

**Price Group 2**

Automotive Body and Chassis Sectional Committee, TE 6

## FOREWORD

This Indian Standard was adopted by the Bureau of Indian Standards, after the draft finalized by the Automotive Body and Chassis Sectional Committee had been approved by the Transport Engineering Division Council.

In the preparation of this standard assistance has been derived from SAE J 362 'Vehicle hood latch system and ARAI's Safety Standard No. 9-1993 'Hood latch system'.

The Committee responsible for the preparation of this standard is given in Annex A.

In reporting the results of a test or analysis made in accordance with this standard, if the final value, observed or calculated, is to be rounded off, it shall be done in accordance with IS 2 : 1960 'Rules for rounding off numerical values ( *revised* )'.

*Indian Standard*

# AUTOMOTIVE VEHICLES — HOOD LATCH SYSTEM — METHOD OF TEST

## 1 SCOPE

**1.1** This standard prescribes the test procedures for evaluating vehicle hood latch systems, which when the hood is fully opened ( assuming the absence of hood stops ) extend at any point above a horizontal plane through the uppermost edge of the steering wheels in the straight a head driving position with the vehicle in a horizontal position.

**1.2** This standard is applicable to cars, light and heavy passenger and commercial vehicles.

## 2 TERMINOLOGY

### 2.1 Hood

Hinged exterior panel or panels covering a compartment located at the forward part of the vehicle.

### 2.2 Hood Latch System

That system employed to keep the hood in position relative to the vehicle body with provisions for controlled release.

### 2.3 Hood Latch Assembly

That mechanism or combination of mechanisms which engages the striker assembly when the hood is closed.

### 2.4 Hood Striker Assembly

That portion of the hood latch system which is engaged by the hood latch assembly.

### 2.5 Primary Latching Mechanism

That portion of the hood latch system which is utilized to secure that hood in the fully closed position.

### 2.6 Secondary Latching Mechanism

That portion of the hood latch system which is utilized to secure the hood when less than fully closed. The second latch of a dual independent system can be considered secondary latching mechanism.

### 2.7 Seal Force

That force which tends to open the hood when the hood is in the fully closed position and the vehicle is stationary.

### 2.8 Type I Field Conditions

Operating a vehicle at a minimum of 120 km/h ( which shall include a safety factor as determined by the vehicle manufacturer ), or at its maximum speed if less than 120 km/h.

### 2.9 Type II Field Conditions

Operating a vehicle at a minimum of 120 km/h ( which shall include a safety factor as determined by the vehicle manufacturer ), or at its maximum speed if less than 120 km/h and the hood suddenly released from primary to secondary position.

## 3 GENERAL REQUIREMENT

**3.1** Each hood shall be held down in such a manner that it does not open without operating the release system as provided.

**3.2** A front opening hood which in any open position partially or completely obstructs a driver's forward view through the windshield shall be provided with a second any latch position on the hood latch system or with a second hood latch system.

## 4 FIELD CONDITION

### 4.1 Field Conditions

**4.1.1** *Type I Field Condition*

Operating a vehicle at a minimum speed of 120 km/h ( which shall include a safety factor determined by the vehicle manufacturer ) or at its maximum speed if it cannot achieve the speed of 120 km/h.

**4.1.2** *Type II Field Condition*

Conditions same as **4.1.1** and the hood is suddenly released from primary to secondary position.

## 5 VEHICLE PERFORMANCE TESTING

### 5.1 Purpose

To determine the ability of the hood latch system to withstand Type I field condition while in primary latch position.

### 5.2 Equipment

Vehicle representative of the design equipped with a calibrated speedometer.

### 5.3 Operation

**5.3.1** Install the hood latch system on vehicle in primary position. Run the vehicle according to **4.1.1** for at least 1 km. Stop the vehicle and operate hood latch system. If operable, repeat the test in opposite direction of travel, to balance out the effect of wind conditions.

### 5.4 Type II Secondary Latched Position

**5.4.1** *Operation*

Install the hood in primary latch position. Operate the vehicle as per type II field condition. Suddenly release hood from primary position to secondary position and continue driving after this action up to 1 km approx. Stop vehicle and operate hood latch system. If operable then repeat the test in opposite direction of travel to balance out the effect of wind conditions.

## 6 LABORATORY PERFORMANCE TEST

### 6.1 Purpose

These tests are conducted to find out the acceptability of the alternate latch system/source by establishing a reference in the laboratory conditions. It is also aimed at determining the ability of hood latch system to withstand a dynamic and static test load in the direction of hood opening, when released from primary to secondary latch position as ascertained during field trials.

### 6.2 Dynamic Test

**6.2.1** *Equipment*

a) Impact fixture ( Fig. 1 ).

b) Time and force measuring instruments.

**6.2.2** *Operation*

a) Mount hood latch and striker on the test machine in the primary latch position. Apply a hood opening load to the secondary latch and striker.

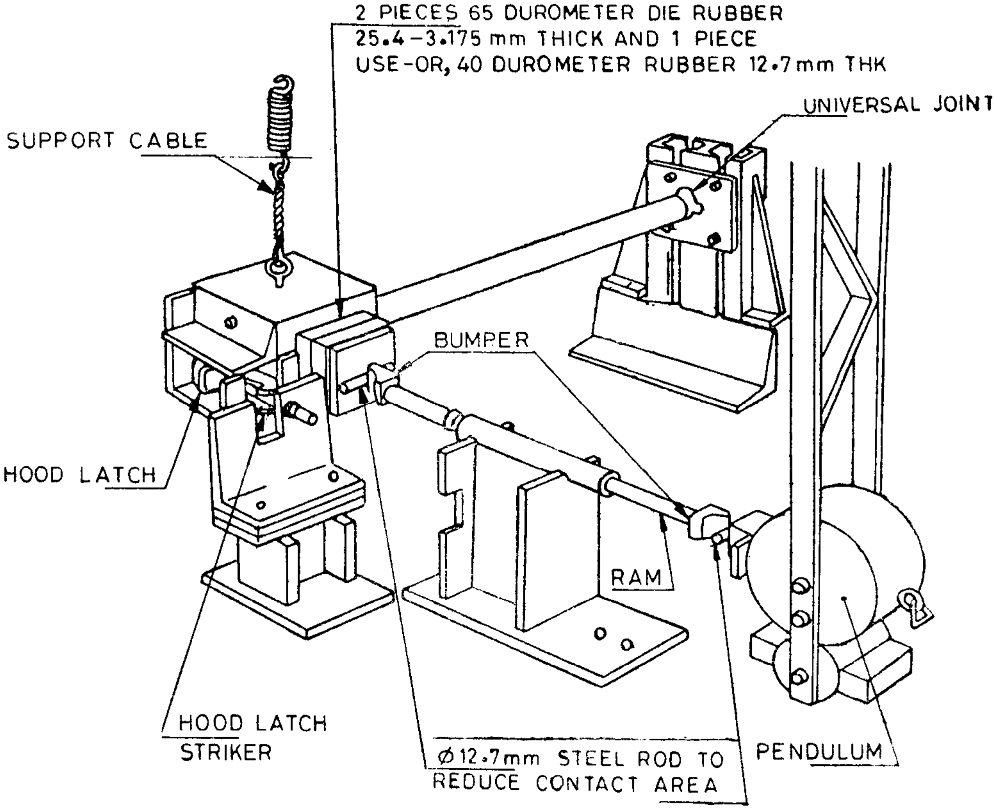
2 PIECES 65 DUROMETER DIE RUBBER
25.4−3.175 mm THICK AND 1 PIECE
USE-OR, 40 DUROMETER RUBBER 12.7 mm THK
UNIVERSAL JOINT
SUPPORT CABLE
BUMPER
HOOD LATCH
RAM
HOOD LATCH STRIKER
Ø12.7 mm STEEL ROD TO REDUCE CONTACT AREA
PENDULUM

FIG. 1 HOOD LATCH IMPACT TEST SETUP

b) Apply 5 cycles of dynamic load starting from zero to maximum specified load and back to zero load. The time span to the peak load moment and time duration for time versus load curve shall be representative of the road test group.

### 6.3 Static Test

**6.3.1** *Equipment*

a) Tensile testing machine

b) Static test fixture ( Fig. 2 )

**6.3.2** *Static Test — Primary Latched Position*

**6.3.2.1** *Operation*

a) Attach the test fixture to the mounting provisions of the latch and striker. Align the direction of engagement parallel to the linkage of the fixture. Mount fixture with latch and striker in primary position in the test machine so as to apply a simulated hood opening load and check the operation of latch and striker assembly.

b) Apply load at a maximum rate of 5 cm/minute until desired load is reached. Release load and check the operation of latch and striker assembly.

**6.3.3** *Static Test — Secondary Latch Position*

**6.3.3.1** *Operation*

a) Attach the test fixture to the mounting provision of the latch and striker. Align the direction of engagement parallel to the linkage of the fixture. Mount fixture with latch and striker in the secondary latched position in the test machine so as to apply a simulated hood opening load to the latch and striker

b) Apply load at a maximum rate of 5 cm/minute until desired load is reached. Release load and check the operation of latch and striker assembly.

NOTE — Figures 1 and 2 for dynamic and static tests respectively show the arrangements for testing a particular type of hood latch system ( Primary and secondary latching system combined ). Suitably modified test set up and arrangements may be used for conducting similar tests on dual, independent systems of latching mechanism.

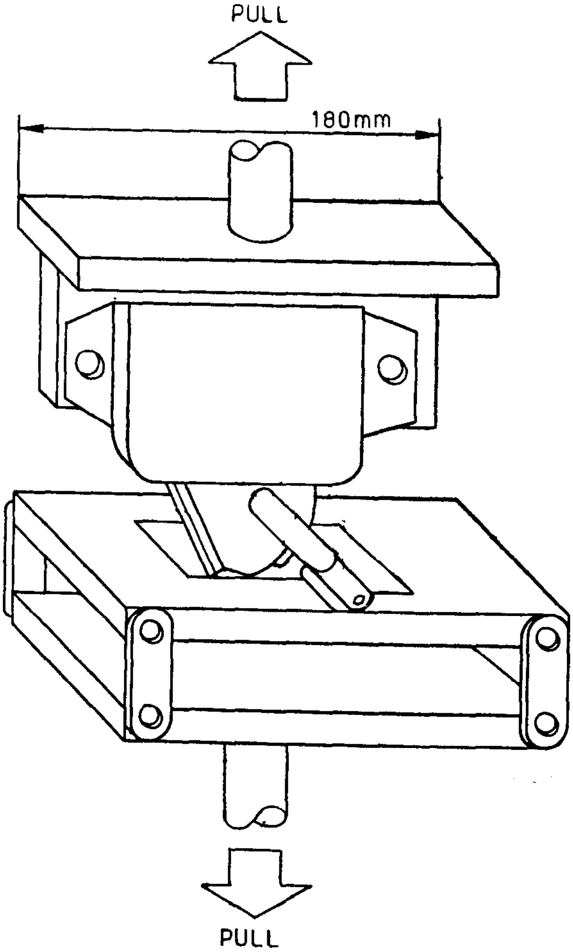

FIG. 2 HOOD LATCH STATIC TEST FIXTURE

# ANNEX A

## ( *Foreword* )

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( Transport Engineering )

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